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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,549	01/23/2004	Paul Tang	2031231.0002	3203

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EXAMINER	
BELLAMY, TAMIKO D	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/762,549	TANG, PAUL	
	Examiner	Art Unit	
	Tamiko D. Bellamy	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *1-5 and 21-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-11,13-18 and 20* is/are rejected.

7)☒ Claim(s) *12 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 September 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/31/04 & 4/8/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II, claims 6-20 in the reply filed on 10/6/05 is acknowledged.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the **test bench** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: **defining the temperature and pressure of the natural gas.**

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 6-8, 10, 11, 13-15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Francisco, Jr. et al. (5,072,416).

Re claims 6 and 13, as depicted in fig. 1, Francisco, Jr. et al. discloses a pipeline (10) through which fluid, the flow rate of which is measured flows (Col. 2, lines 60-62). Francisco, Jr. et al. discloses circulating a test medium (e.g., fluid) through the prover system (14) such that it passes through a reference meter (e.g., master meter 18) and the meter (e.g., meter under test 12) to be proved. As depicted in fig. 1, Francisco, Jr. et al. discloses mounting the a meter (12). Francisco, Jr. et al. does not specifically state that the test medium is a gas having the characteristics of a) a density > approximately 2 x (Density of natural gas), b) dynamic viscosity approximately < dynamic viscosity of natural gas, and c) Ideal gas behavior for approximately 15 degrees C < T < 25 degrees C and approximately 1 bar < P <50 bar. However, Francisco, Jr. et al. specifically states **(See Col. 2, lines 62-64)** that the method **can be applied to most any fluid**. Therefore,

this teaching clearly infers and/or suggests the selection of a test medium gas having a density > approximately 2 x (Density of natural gas). Furthermore, the selected gas having a density > approximately 2 x (Density of natural gas) would have the inherent function of dynamic viscosity approximately < dynamic viscosity of natural gas, and c) Ideal gas behavior for approximately 15 degrees C < T < 25 degrees C and approximately 1 bar < P <50 bar. Therefore, to employ Francisco, Jr. et al. on a test medium gas having the characteristics of a density > approximately 2 x (Density of natural gas) would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claims 7 and 14, Francisco, Jr. et al. discloses a pipeline (10) through which fluid, the flow rate of which is measured flows (Col. 2, lines 60-62). Francisco, Jr. et al. does not specifically discloses the test medium gas having the characteristic of liquefying easily at a temperature > approximately –100 degrees C at atmospheric pressure. However, Francisco, Jr. et al. specifically states **(See Col. 2, lines 62-64)** that the method **can be applied to most any fluid**. This teaching clearly infers and/or suggests of selecting a gas which has the inherent characteristics of liquefying easily at a temperature > approximately –100 degrees C at atmospheric pressure. Therefore, to employ Francisco, Jr. et al. on a test medium gas which has the inherent characteristics of liquefying easily at a temperature > approximately –100 degrees C at atmospheric pressure would have been obvious to one of ordinary skill in the art at the time of the

invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claims 8 and 15, Francisco, Jr. et al. discloses a pipeline (10) through which fluid, the flow rate of which is measured flows (Col. 2, lines 60-62). Francisco, Jr. et al. does not specifically discloses the test medium gas having the characteristic of being stored at room temperature in liquid form at approximately $P < 65$ bar. However, Francisco, Jr. et al. specifically states **(See Col. 2, lines 62-64)** that the method **can be applied to most any fluid**. This teaching clearly infers and/or suggests selecting a gas which has the inherent characteristics of being stored at room temperature in liquid form at approximately $P < 65$ bar. Therefore, to employ Francisco, Jr. et al. on a test medium gas which has the inherent characteristic of being stored at room temperature in liquid form at approximately $P < 65$ bar would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claims 10 and 17, as depicted in fig. 1, Francisco, Jr. et al. discloses a pipeline (10) through which fluid, the flow rate of which is measured flows (Col. 2, lines 60-62). While Francisco, Jr. et al. does not specifically disclose the gas is carbon dioxide, Francisco, Jr. et al. specifically states **(See Col. 2, lines 62-64)** that the method **can be applied to most any fluid**. This teaching clearly infers and/or suggests selecting a carbon dioxide gas. Therefore, to employ Francisco, Jr. et al. on a carbon dioxide gas would have been obvious to one of ordinary skill in the art at the time of the invention

since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claims 11 and 18, as depicted in fig. 1, Francisco, Jr. et al. discloses a pipeline (10) through which fluid, the flow rate of which is measured flows (Col. 2, lines 60-62). While Francisco, Jr. et al. does not specifically disclose the gas is carbon dioxide, Francisco, Jr. et al. specifically states (**See Col. 2, lines 62-64)** that the method **can be applied to most any fluid**. This teaching clearly infers and/or suggests selecting from a group of carbon dioxide, argon, or sulphur hexafluoride gases. Therefore, to employ Francisco, Jr. et al. on a gas selected from a group of carbon dioxide, argon, or sulphur hexafluoride gases would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

6. Claims 6-11, 13-15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludwin (3,538,741).

Re claims 6 and 13, as depicted in fig. 1, Ludwin discloses a conduit (12) through which fluid is flowing (Col. 2, lines 56-59). Ludwin discloses circulating a test medium (e.g., fluid) through the prover system such that it passes through a reference meter and the meter (e.g., field meter 10) to be proved (Col. 3, lines 7-14). As depicted in fig. 1, Ludwin discloses mounting the a meter (e.g., field meter 10). Ludwin does not specifically state that the test medium is a gas having the characteristics of a) a density > approximately 2 x (Density of natural gas), b) dynamic viscosity approximately < dynamic viscosity of natural gas, and c) Ideal gas behavior for approximately 15 degrees

C < T < 25 degrees C and approximately 1 bar < P <50 bar. However, Ludwin specifically states **(See Col. 2, lines 57-59)** that a fluid, such as gas or the like flows through the conduit (12). Therefore, this teaching clearly infers and/or suggests the selection of a test medium gas having a density > approximately 2 x (Density of natural gas). Furthermore, the selected gas having a density > approximately 2 x (Density of natural gas) would have the inherent function of dynamic viscosity approximately < dynamic viscosity of natural gas, and c) Ideal gas behavior for approximately 15 degrees C < T < 25 degrees C and approximately 1 bar < P <50 bar. Therefore, to employ Ludwin on a test medium gas having the characteristics of a density > approximately 2 x (Density of natural gas) would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claims 7 and 14, Ludwin discloses a conduit (12) through which fluid is flowing (Col. 2, lines 56-59). Ludwin does not specifically discloses the test medium gas having the characteristic of liquefying easily at a temperature > approximately –100 degrees C at atmospheric pressure. However, Ludwin specifically states **(See Col. 2, lines 56-59)** that a fluid, such as gas or the like is used. This teaching clearly infers and/or suggests of selecting a gas which has the inherent characteristics of liquefying easily at a temperature > approximately –100 degrees C at atmospheric pressure. Therefore, to employ Ludwin on a test medium gas which has the inherent characteristics of liquefying easily at a temperature > approximately –100 degrees C at atmospheric pressure would have been

obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claims 8 and 15, Ludwin. discloses a conduit (12) through which fluid is flowing (Col. 2, lines 56-59). Ludwin does not specifically discloses the test medium gas having the characteristic of being stored at room temperature in liquid form at approximately P < 65 bar. However, Ludwin specifically states **(See Col. 2, lines 56-59)** that a fluid, such as gas or the like is used This teaching clearly infers and/or suggests selecting a gas which has the inherent characteristics of being stored at room temperature in liquid form at approximately P < 65 bar. Therefore, to employ Ludwin on a test medium gas which has the inherent characteristic of being stored at room temperature in liquid form at approximately P < 65 bar would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claim 9, Ludwin discloses circulating a test medium gas (fluid) a prover system. While Ludwin does not specifically that the gas is circulated through the prover system at a pressure of approximately 8 bar and temperature of approximately 20 degrees C, Ludwin specifically states (See Col. 4, lines 19-23) that the pressure may be set by adjusting a pressure regulator (60) and **thereby calibrate at different operating pressures**. Ludwin also discloses determining the temperature of the meter (e.g., field meter 10) via a thermometer (37). This teaching clearly infers and/or suggests selecting a pressure of 8 bar and through experimentation setting the temperature to approximately 20 degrees C. Therefore, to employ Ludwin on circulating gas through the prover system

at a pressure of approximately 8 bar and temperature of approximately 20 degrees C would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claims 10 and 17, as depicted in fig. 1, Ludwin discloses a conduit (12) through which fluid flows (Col. 2, lines 56-59). While Ludwin does not specifically disclose the gas is carbon dioxide, Ludwin specifically states **(See Col. 2, lines 56-59)** that a fluid, such as gas or the like is used. This teaching clearly infers and/or suggests selecting a carbon dioxide gas. Therefore, to employ Ludwin on using carbon dioxide gas would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

Re claims 11 and 18, as depicted in fig. 1, Ludwin discloses a conduit (12) through which fluid flows (Col. 2, lines 56-59). While Ludwin does not specifically disclose selecting a gas from a group of carbon dioxide, argon, or sulphur hexafluoride gases, Ludwin specifically states **(See Col. 2, lines 56-59)** that a fluid, such as gas or the like is used.. This teaching clearly infers and/or suggests selecting a gas from a group of carbon dioxide, argon, or sulphur hexafluoride gases. Therefore, to employ Ludwin on a gas selected from a group of carbon dioxide, argon, or sulphur hexafluoride gases would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches calibrating/proving a meter including the use of a prover system.

7. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludwin (3,538,741). as applied to claims 6-11, 13-15, 17, and 18 above, and further in view of Hillburn (4,649, 734) and Akashi et al. (3,840,051) and Delajoud (6,732,596).

Re claims 16 and 20, as depicted in fig. 1, Ludwin discloses a fill valve (16) for inputting the test medium into the circulation system (Col. 3, lines 40-41). Ludwin discloses a compressor for pressurizing the test medium. Ludwin discloses a variable speed motor (e.g., combination or speed governor (27) and air motor (20)) (Col. 3, lines 29-35). Ludwin discloses a pressure control valve (e.g. pressure regulator 60). Ludwin discloses a conduit (12) for connecting all the foregoing elements. **Ludwin lacks the detail of flow straighteners arranged in advance of each of the reference meter and the test bench, and means for cooling the test medium.** Hillburn discloses a flow straightener (e.g., straightening vanes 38) in advance of the test bench (e.g., meter (16) to be calibrated). Therefore, to modify Ludwin by employing a flow straightener in advance of the test bench would have been obvious to one of ordinary skill in the art at the time of the invention since Hillburn teaches a calibration device having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Ludwin and Hillburn since Ludwin states that his invention is applicable to a prover system and Hillburn is directed to a prover system. **The combination of Ludwin and Hillburn lacks the detail of a flow straightener in advance of the reference meter, and means for cooling the test medium.** As depicted in fig. 1, Akashi et al. discloses placing a straightener before a calibrated reference meter (e.g., flowmeter) (Col. 1, lines 60-68; Col. 2, lines 1-8). Therefore, to modify the combination of Ludwin and Hillburn by employing a straightener in advance of a reference meter would have been obvious to one of ordinary skill in the art at the time of the invention

since Akashi et al teaches a device having theses design characteristics. The skilled artisan would be motivated to combine the teachings of the combination of Ludwin and Hillburn and Akashi et al. since the combination of Ludwin and Hillburn states that the invention is applicable to a prover system including a reference meter and Akashi et al. is directed to a using a straightener before a reference meter which is known for uses in prover systems. **The combination of Ludwin, Hillburn, and Akashi et al. lacks the detail of a means for cooling the test medium.** Delajoud discloses a means for cooling (e.g., heat exchanger 35) the test medium. Therefore, to modify the combination of Ludwin, Hillburn, and Akashi et al. by employing a means for cooling the test medium would have been obvious to one of ordinary skill in the art at the time of the invention since Delajoud teaches a device having theses design characteristics. The skilled artisan would be motivated to combine the teachings of the combination of Ludwin, Hillburn, and Akashi et al. and Delajoud since the combination of Ludwin, Hillburn, and Akashi et al. states the invention is applicable to a prover system including a meter and Delajoud is directed to a meter.

Allowable Subject Matter

8. Claims 12 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamiko D. Bellamy whose telephone number is (571) 272-2190. The examiner can normally be reached on Monday - Friday 7:30 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tamiko Bellamy
T.B.
March 14, 2006

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